

WHITE OAK BAYOU BRIDGE
Texas Historic Bridges Recording Project
Spanning White Oak Bayou at Heights Boulevard
Houston
Harris County
Texas

HAER No. TX-40

HAER
TEX
101-HOUT,
9-

BLACK AND WHITE PHOTOGRAPHY
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
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Location: Spanning White Oak Bayou at Heights Boulevard,
Houston, Harris County, Texas.
UTM: 15/268260/3296070 (west bridge)
15/268230/3296080 (east bridge)
USGS: Houston Heights, Texas, quadrangle (1982).

Date of Construction: 1922.

Designer: W. W. Washburn, Bridge Engineer, City of Houston.

Builder: Charles K. Horton, Houston, Texas.

Present Owner: City of Houston.

Present Use: Vehicular bridges.

Significance: These twin 240'-0"-long concrete bridges provide a distinctive gateway at the southern end of the Houston Heights neighborhood in the city of Houston. They feature decorative urn-shaped balustrade railings with newels. The side railings of each bridge wrap around to link the two structures. These bridges are two of a series of concrete bridges with decorative railings built over the Houston bayous in the 1920s, only a few of which survive.

Historian: J. Philip Gruen, August 1996.

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Houston Heights

Houston's prevailing image has become almost commonplace: it is a city that sprawls, that favors the automobile over the pedestrian, destruction over preservation, the individual over community. It is a city of dynamism, of contrasts, of rapid change — a city where the individual's right to promote, speculate, and build has never met substantial opposition. It is a city where the past might be ten years ago, and where the future always seems right around the corner.¹ Much of this is exaggeration, to be sure, yet in America's only major city without a zoning ordinance, it is an image that is perhaps not entirely undeserved.

What remains hidden is that Houston, today the nation's fourth largest city and tenth largest metropolitan area, was once a walking city and a city of neighborhoods. It was a city where commerce and culture were concentrated and where, even in the outlying neighborhoods linked by streetcar lines in the late nineteenth century, there was still a sense of community and a sense of place.

One of those neighborhoods, Houston Heights, seems to defy all prevailing Houston logic. Although it was developed independently of the city, the Heights was one of the first — and one of the only — planned communities in the Houston vicinity. Named for its location 75'-0" above sea level (the highest parcel of land in the area), developers originally surveyed the Heights in 1891, and by 1892, subdivided it into residential districts and laid streetcar lines along Heights Boulevard, its principal thoroughfare. Rapid growth enabled the Heights to become its own municipality by 1893, and twenty-five years later, in 1918, its residents voted for annexation to Houston.² Today, Houston Heights is part of the city's Sixth Ward.

White Oak Bayou Bridge

Only four years after annexation, Houston city officials elected to replace decaying timber bridges along Heights Boulevard over White Oak Bayou with two one-way, 240'-0"-long reinforced concrete spans. These two structures, officially called "White Oak Bayou Bridge," were neither massive nor imposing, yet their railings with urn-shaped balustrades, newels, and light standards gave them a certain civic presence and urban identity. The inside railing, which wraps around to connect the two bridges, is the only wrap-around railing left in Houston. The

¹ For impressions of Houston along these lines, see, for example, Joe R. Feagin, *The Entrepreneurial City: Houston in Political and Economic Perspective* (New Brunswick: Rutgers University Press, 1988); Stephen Fox, introduction to *Houston Architectural Guide*, ed. Peter Papademetriou (Houston: Herring Press for American Institute of Architects, Houston Chapter, 1990), pp. 13-17; or Don E. Carleton and Thomas H. Krenek, *Houston: Back Where We Started* (Houston: Houston City Magazine, n.d.).

² The vote was eighty-seven in favor of annexation, and ten opposed. See Warner E. Gettys, ed. *Houston: A History and Guide* (Houston: Anson Jones Press, 1942), p. 99.

design of the bridges represents a conscious attempt at civic enhancement through built form, coinciding both with a growing local standard in the 1920s and with a nationwide trend of civic beautification in the first decades of the twentieth century.

The concrete bridges replaced twin wooden structures built to span White Oak Bayou in 1893, shortly after the area's development. Those bridges were 60'-0" apart, 45'-0" wide, and 250'-0" long. They were built on cedar pilings, contained over 65,000 feet of lumber, and were apparently "so solidly put together" that they could withstand any weight.³

The bridges not only served local horse and buggy traffic heading to and from Houston Heights and downtown Houston, but also traffic headed to the railroad depot for the Missouri, Kansas, and Texas (MKT) line on Seventh and Allston Streets in the Heights.⁴ Two bridges were built here rather than one to provide for streetcars going north or south and to ensure the beauty and uniformity of the divided Heights Boulevard.⁵ They were part of a major project to make Houston Heights a modern, up-to-date city in just two years' time.⁶

Site Development: 1872-1920

Houston Heights was the creation of Oscar Martin Carter, a Kansas-based developer who owned the Omaha and South Texas Land Company. In the 1880s, Carter purchased part of Stephen F. Austin's 1872 land grant to I. W. Brashear, which would later become Houston Heights. Prior to the development of the Heights, Carter also bought the Houston City Street Railway Company and the Bayou City Street Railway, and later changed the name of the former to "Houston Heights Street Railway." Carter's purchase of the railway was likely made, in part, to ensure its extension to the Heights in order to promote residential development. He sent company treasurer Daniel Denton Cooley to Houston in 1891 to plan and manage the new 1,765-acre tract. In early 1892, Cooley subdivided the land into residential and industrial districts.

³ M. Agatha, *The History of Houston Heights 1891-1918* (Houston: Premier Printing Company, 1956), p. 23.

⁴ While this particular line has long since been sold to Southern Pacific, trains still pass through the Heights on a regular basis.

⁵ Marguerite Johnston, *Houston: The Unknown City 1836-1946* (College Station: Texas A&M Press, 1991), p. 102. Johnston quotes Cooley's grandson, who said that his grandfather, the town's master planner, insisted on two bridges across the bayou to "do justice to Heights Boulevard." Another reference to the need for two bridges can be found in *Houston Illustrated*, 1873, cited in Agatha, p. 23.

⁶ By 1921, the wooden bridge on the eastern side had been replaced with a steel bridge. This was removed once construction began on the new concrete structures.

To aid development, Carter's land company paid approximately \$500,000.00 to extend the streetcar line from downtown Houston; to clear, grade, and landscape streets; and to build a railroad depot and a steam freight line linking the Heights with the MKT line for the purposes of hauling industrial goods. All of this was completed before any lots were put up for sale.⁷ Despite the speculative development of the town (in keeping with the nature of Houston generally), the carefully planned districts of the Heights, with Heights Boulevard in the middle, resulted in a well-organized urban area. People began to purchase land almost immediately, and Carter's grand real estate investment paid off.

Surveyors laid out the boulevard with two roads, each with streetcar tracks, and a wide grassy esplanade in the center. It was the first divided boulevard in the Houston area. Once people began to move to the Heights, those who could afford luxurious accommodations — in this case, those connected with the Omaha and South Texas Land Company — built large homes on either side of Heights Boulevard.⁸ The grand houses were built in a variety of Victorian styles, with porticos over the entrances lending a regional flavor and providing dwellers with relief from the searing heat and humidity so characteristic of Houston.⁹ This array of large houses, combined with the boulevard's esplanade and its native oak and pine trees, gave the street a presence that did not go unnoticed in the local press.¹⁰

With the boulevard grading complete, builders quickly began work on the timber bridges at its southern edge, necessary to provide access to the railroad depot and to carry the tracks for the newly instituted streetcar line.¹¹ It was not long before Heights residents took a keen interest in civic improvements, and by the close of the 1890s the little city featured a school, hotel, opera house, recreational and amusement area, and two newspapers. The amusement area, known both as Coombs Park and Forest Park, was developed by E. L. and Julia Coombs on sixty-four acres of land bordered by White Oak Bayou on the south, Fourth Avenue on the north, and Heights

⁷ G. Randle Pace and Deborah Markey, *Houston Heights 1891-1991: A Historical Portrait and Contemporary Perspective* (Houston: Texas Publishing Company, 1991).

⁸ Papademetriou, p. 188.

⁹ Other popular styles also appear along the boulevard and the surrounding streets, including Colonial Revival, and in later years, the Prairie Style.

¹⁰ Agatha, p. 18, recounts that pictures of the boulevard frequently graced the pages of Houston newspapers. She notes one issue of the *Houston Chronicle* in 1955 which shows the illuminated boulevard and describes it as the "most beautiful street in old Houston or the new." Agatha contends that it is "doubtful" that any street in the Gulf Coast area has received as much attention for its natural beauty or its landscaping.

¹¹ The streetcars began service to and from Houston Heights on April 29, 1893.

Boulevard on the east, just northeast of the bridge. The park featured a high-diving area, zoo, goat-racing track, and a two-and-a-half story natatorium.¹²

The Heights, however, thrived as a self-sufficient community in the early part of the twentieth century largely because of its industrial output. Many of the initial Heights settlers were attracted to the area because of the job opportunities presented by various industries, which by 1900 included a pickle factory, electric company, sawmill, textile mill, mattress factory, brick and tile manufacturer, cotton oil company, furniture company, and Venetian blind factory. By 1918, Southwestern Oil Company had opened a refinery complex just west of Yale Street and a block southwest of the timber bridges. The proximity of the railroad depots — by this time including a stop for the Houston and Texas Central Railroad a few blocks south of the bridges on Heights Boulevard near Washington Avenue — was another key factor in the community's development. The existence of streetcars in the area also created the opportunity to develop more neighborhoods, and by the late 1910s the Brooke-Smith addition and Woodland Heights had filled in the once-vacant space between Houston and Houston Heights.

While the streetcar lines, electrified by 1890, were used frequently throughout the 1910s and 1920s, automobiles arrived in the area as early as 1905 and had become common by 1920.¹³ Buses soon began to replace the streetcars, and with a high volume of motorized vehicular traffic crossing the timber bridges by the 1920s, it became necessary to create a more permanent crossing over the bayou.

The 1920s was a decade of growth for Houston, due principally to the phenomenal prosperity of the oil industry. To support its growing population, the municipal government allocated funds toward the improvement and creation of all sorts of city services, including highways, parks, street widenings, public buildings, and bridges.¹⁴ Because the Heights had become a part of Houston in 1918, the construction of any new municipal services in the Heights was also under the city's jurisdiction. This meant that municipal bridge projects would be designed by the city's bridge engineer and assistant bridge engineers, and would be under the overall supervision of the city engineer.

¹² People would come from outside the Heights in their spare time to swim in the natatorium, particularly in the summer. With its large round tower and two smaller turrets, the natatorium remained popular until the 1940s, when swimming pools began to appear. See, for example, Johnston, p. 169.

¹³ For a description of a 1905 local event where automobiles were present, see Agatha, p. 102.

¹⁴ H. Clay Waters, "Years of Rapid Growth," in *The City Book of Houston Illustrated*, ed. Norman Henry Beard (Houston: n.p., 1925), p. 31. See also Norman Henry Beard, ed., *The Municipal Book of the City of Houston Illustrated 1922: Containing an Analysis of Houston and a Brief Survey of the Activities of the Various City Departments* (Houston: n.p., 1922).

W. W. Washburn

Sometime in 1921, City Bridge Engineer W. W. Washburn drew up the plans for the bridges over White Oak Bayou. By 1921, the 36-year-old Washburn had already had over seven years of experience in this position, but had only recently returned to it after a three-year absence. Prior to rejoining the Houston engineer corps, his professional experience included work as a rodman, a field engineer, and a bridge plant engineer for private irrigation and engineering companies in Texas, in addition to work as a draftsman, project engineer, and district engineer for the Wyoming Highway Department.

From 1911 to 1917, Washburn served as Houston's bridge engineer but also worked on a number of other projects, including retaining walls, wharves, sewage disposal plants, and waterworks plants. In 1914, Washburn designed the San Jacinto Street Bridge, a reinforced concrete arch bridge with open spandrels and open railings, over Buffalo Bayou. This bridge complemented the open-spandrel arched design of the nearby Main Street Viaduct, completed two years earlier.¹⁵

In an application Washburn filed for admission to the Texas State Board of Registration for Professional Engineers, he wrote that his second stint with the city as the bridge engineer put him in charge of plans, specifications, and supervision of "several large concrete bridges," in addition to wharves and a city underpass.¹⁶

Design and Construction: 1921-1922

As the city bridge engineer, Washburn was also put in charge of the Heights Boulevard project. On January 18, 1922, Houston Mayor Oscar F. Holcombe and the city commissioners adopted a motion to receive bids for the "Heights Boulevard Bridge" over White Oak Bayou, and determined that these bids would be referred to the city engineer for tabulation and report.

On February 13, 1922, the commissioners awarded the contract to the Charles K. Horton Company of Houston for its low bid of \$67,000.00. Horton had been awarded several City of Houston projects, including construction of sewers, streets, parks, and a turning basin in the Houston Ship Channel. Official approval for the bridge project came one week later, with the money allocated by the city controller from the "Bridge Building Bond Fund."¹⁷ Construction

¹⁵ The San Jacinto Street Bridge was reconstructed by the city in 1996 for nearly \$1.5 million.

¹⁶ W. W. Washburn, "Application for Registration to Practice Professional Engineering," April 11, 1940 (Texas State Board of Professional Engineering Headquarters, Austin, Texas).

¹⁷ City of Houston, Texas, *City Council Minutes* (Council Chamber, City Hall, Houston, Texas), January 18, February 13, and February 20, 1922.

probably began in late February or March, and the new bridges spanned the bayou by the end of the year.

Washburn designed two 240'-0"-long, six-span reinforced concrete bridges with a total of three concrete railings featuring ornamental urn-shaped balustrades and newels. The railings frame two one-way 12'-0" roadways, 6'-3" outside shoulders, and 6'-3" sidewalks. Streetcar tracks originally existed along the inside portions of the roadways.

The inside railings of the bridges were designed as a continuous line, enclosing the open space over the bayou and giving the bridges an oval shape between the two spans. Thus, Washburn physically linked the two bridges and created something rather unique. While some twin Houston bridges included railings that wrapped around one side, no others featured a continuous railing.

The six spans range from 40'-0" to 27'-0" in length, each separated by five large concrete newels with decorative details.¹⁸ The largest span is that which extends over the bayou, between piers two and three on the east bridge, and piers seven and eight on the west bridge. Larger, sarcophagus-like newels rest atop the abutments on either end, with the ends of the eastern rail of the east bridge and the western rail of the west bridge flaring slightly outward. Light standards stood atop the newels, as shown in a photograph of the bridge taken shortly after construction and reprinted in a 1925 municipal guide to Houston.¹⁹

For the substructure, plans called for five reinforced concrete battered piers driven to red clay with 20'-0" concrete piles through silt, gravel, blue clay, and sand. These piers support slabs, girders, and steel I-beams encased in concrete which, in turn, support the 40'-2"-wide deck. On either side of the bridges are concrete abutments, 193'-0" apart.

Although Heights Boulevard and its esplanade extended south of the bayou by this time, the area south of the bridges remained primarily industrial. The new bridges, however, provided an entrance and transition into a different sort of area to the north: they were a gateway to the fashionable residential area of Houston Heights.

Decorative Concrete Railings in Houston

The detail of the bridges, particularly the concrete railings with their urn-shaped balustrades, also contributed to the formulation of a growing common standard for Houston's bridges. By 1931, a number of reinforced concrete bridges had been built over Houston bayous with railings containing similar balustrades.²⁰ In 1931, the same railings were used on the Yale

¹⁸ The length of each of the spans on the bridge, including the abutments, are identical.

¹⁹ Beard (1925).

²⁰ These bridges include the Sabine Street Bridge, the Crockett Street Bridge, the Shepard's Dam Road Bridge, the Cleveland Park Bridge, the Franklin Street Bridge, the Capitol Avenue Bridge, the Smith Street Bridge, and the Lowell Street Bridge.

Street Bridge over White Oak Bayou, just one block west of the bridges on Heights Boulevard. Many of these bridges are depicted in a 1925 municipal guide under the heading "Handsome Concrete Bridges," but most have either been completely rebuilt or have had their railings replaced for safety reasons.²¹ In 1987, however, municipal funds were used to restore the Sabine Street Bridge, spanning Buffalo Bayou just west of downtown. Its concrete balustrades are featured prominently on the front cover of the 1995-96 Southwestern Bell M-Z Yellow Pages for greater Houston.

The earliest of the existing concrete bridges in Houston with these decorative concrete railings is the Franklin Avenue Bridge, built in 1914 by resident engineer E. A. Fretz under the supervision of City Engineer E. E. Sands. That Houston would begin to build these railings by 1914 is significant, for it was not until 1918 that the Texas State Highway Department adopted the railing as one of ten standard designs for use on bridges and culverts.²²

In 1922, Washburn had left his post as Houston bridge engineer and began work as a construction engineer and estimator for private construction companies in Houston. J. G. McKenzie took over the position, but the reinforced concrete bridges over the bayous continued to feature the same railings in the 1920s and early 1930s.

Evolution of Structure and Site: 1922-Present

Over the years, the White Oak Bayou Bridge has adequately served the traveling public on Heights Boulevard, suffering little structural damage despite a constant traffic load. The bridges were altered little over the years, aside from the addition of large pipes strung longitudinally between and under the bridges for a United States Geological Survey stream flow measuring station. The pipes that are connected to the bridges are attached to the concrete girders by riveted steel members. Large holes in the concrete indicate where the pipes may have once been.

The bridges have deteriorated over the years, but their appearance has been most drastically altered by their ever-changing context. Most substantial among the changes was the construction of Interstate 10 in the 1950s, which sliced through the Heights neighborhood just north of the bridges.²³ While the freeway may have contributed significantly to the local Houston economy and facilitated movement in and out of the city, it severely diminished the

²¹ Beard (1925).

²² The initial group of standard state highway department bridge railings was adopted in 1918 under the direction of State Bridge Engineer George G. Wickline. The railing with the urn-shaped balustrades is an example of the type "J" standard. See Texas Highway Department, *Standard Railings for Bridges and Culverts*, May 1918 (Texas Department of Transportation, Environmental Affairs Division, Austin, Texas).

²³ Interstate 10 is located 0.1 mile north of the White Oak Bayou Bridge.

significance of the White Oak Bayou Bridge as a grand entrance into Houston Heights, and contributed to a gradual decline of its surroundings. By the 1950s, the natatorium — briefly revived following the Great Depression — had long since been reduced to rubble. In 1968, the city channelized White Oak Bayou for flood control purposes by confining it in sloping concrete retaining walls. Shortly thereafter, other developments catering to an automobile-bound public began to appear around the site, their existence due primarily to the new freeway and its Heights Boulevard exits.

Today, the area just south of the bridges includes a restaurant, parking lot, liquor store, and an apartment complex, and the north side is dominated by the freeway overpass. The former park site, long since obliterated by the freeway, now houses a truck rental and auto repair shop, supply centers, an electronics store, and a gas station. Rather than a significant gateway for the Houston Heights neighborhood, the bridge's decorative railings and light standards seem anachronistic amidst the disconnected, scattered buildings, the parking lots, and the massive freeway overpass immediately to its north. The days of picnicking under the trees along the banks of the bayou, recounted by Heights historians, are now distant memories.²⁴

Conclusion

With the once-distinctive community in decline, a group of concerned citizens formed the Houston Heights Association in 1973 to help preserve the area's historic integrity.²⁵ The association has been successful in raising money for the restoration of homes and public buildings in the community, thereby helping the Heights maintain a semblance of its nineteenth and early twentieth century neighborhood character. In 1991, to honor the community's one-hundredth birthday, the association organized a restoration project for the bridges. This restoration included patching the balustrades and newels. Individual donors provided money for new light standards recalling those that originally lit the bridge.

Following an initial inspection by the city of Houston, a report filed by the Texas Department of Transportation in March of 1995 determined that the bridges were structurally insufficient and would have to be replaced. The department recommended that they be removed and replaced with new concrete bridges with the same dimensions and with new "ornamental" railings approved by the City of Houston and the Houston Heights Association. Through consultation with the Texas Historical Commission, the existing railings will be removed and used on a proposed hike and bike trail along White Oak Bayou. Within the last few years, the city has dismantled the urn-shaped balustrade railings on a number of early Houston bridges and

²⁴ For a description of community activities along the banks of the bayou, see Agatha, p. 103.

²⁵ It is possible that the Heights area began to decline shortly after annexation, for the city of Houston, as a large municipality, had to spread funding for municipal services over a much wider area. See William S. McDonald, "The Spirit of the Heights Reborn," in Agatha, p. 127.

replaced them with new ones meeting current safety specifications. Houston now has only three bridges remaining that exhibit this once-prominent decorative bridge feature.

There was a time when the twin bridges over White Oak Bayou blended comfortably with their surroundings, when their design reflected overall civic beautification and contributed to a sense of place. These bridges are among the increasingly fewer structures in the Houston area that present the city as it was and how it might have been — before the lack of zoning restrictions, the freeways, and the explosive decentralization of the postwar years ripped much of its original context apart and contributed to its contemporary image.

SOURCES CONSULTED

- Agatha, M. *The History of Houston Heights 1891-1918*. Houston: Premier Printing Company, 1956.
- Beard, Norman Henry, ed. *The Municipal Book of the City of Houston Illustrated 1922: Containing an Analysis of Houston and a Brief Survey of the Activities of the Various City Departments*. Houston: n.p., 1922.
- _____. *The City Book of Houston Illustrated*. Houston: n.p., 1925.
- Carleton, Don E., and Thomas H. Krenek. *Houston: Back Where We Started*. Houston: Houston City Magazine, n.d.
- City of Houston, Texas. *City Council Minutes, 1922*. Council Chamber, City Hall, Houston, Texas.
- Feagin, Joseph R. *The Entrepreneurial City: Houston in Political and Economic Perspective*. New Brunswick: Rutgers University Press, 1988.
- Gettys, Warner E., ed. *Houston: A History and Guide*. Houston: The Anson Jones Press, 1942.
- Johnson, Lee, and Peter Flagg Maxson. "Houston Heights," Harris County, Texas. National Register of Historic Places Registration Form, 1984. U.S. Department of the Interior, National Park Service, Washington, D.C.
- Johnston, Marguerite. *Houston: The Unknown City 1836-1946*. College Station: Texas A&M Press, 1991.
- Jones, Julia. *Houston 1936 to 1940*. Houston: self-published, n.d.
- McComb, David G. *Houston: The Bayou City*. Austin: The University of Texas Press, 1969.
- Pace, G. Randle, and Markey, Deborah. *Houston Heights 1891-1991: A Historical Portrait and Contemporary Perspective*. Houston: Texas Publishing Company, 1991.

- Papademetriou, Dimitri, ed. *Houston Architectural Guide*. Houston: Herring Press for American Institute of Architects, Houston Chapter, 1990.
- Texas Highway Department. *Standard Railings for Bridges and Culverts*, May 1918. Texas Department of Transportation, Environmental Affairs Division, Austin, Texas.
- Washburn, W. W. "Application for Registration to Practice Professional Engineering," April 11, 1940. Texas State Board of Professional Engineering Headquarters, Austin, Texas.
- _____. "San Jacinto St. Reinforced Concrete Bridge at Houston, Texas." *Concrete-Cement Age*, August 1914, pp. 47-54.
- Young, Samuel O. *A Thumb-Nail History of the City of Houston Texas: From Its Founding in 1836 to the Year 1912*. Houston: Rein and Sons Company, 1912.